A CODE OF RULES

FOR THE

PREVENTION

OF

INFECTIOUS & CONTAGIOUS DISEASES IN SCHOOLS

EIGHTH EDITION

LONDON
J. & A. CHURCHILL
7 GREAT MARLBOROUGH STREET
1923

2s. 6d. net.

School Children need VIROL in Winter

Scientific experiments have proved that Virol enormously increases the power of the body to resist infection.

Virol is used in more than 3,000 Hospitals, Consumption Sanatoria, etc.

In Jars, 1/3, 2/- and 3/9.

VIROL Ltd., Hanger Lane, Ealing, London, W.5.

Wellcome Library

22503573610

ISOLATION OF THE INFECTED.

Varicella (Chickenpox).—Until every scab has fallen off, particular attention being paid to the scalp.

Diphtheria.—In no case for less than four weeks, and until convalescence is completed, so that there is no longer any sore throat, or any abnormal discharge from the throat, nose, ears, or eyes, no cutaneous pustulation and no albuminuria, and that at least three successive bacteriological examinations of the pharyngeal and nasal mucus for the specific bacillus made at intervals of not less than two days have been attended with negative results, each examination having been made not less than three hours after the discontinuance of local antiseptic applications.

Rubella (German Measles) and **Epidemic Roseola (Rose Rash).**—For not less than seven days from the date of the appearance of the rash, provided there is no persistence of nasal or other symptoms.

Morbilli (Measles).—For not less than two weeks from the date of the appearance of the rash, convalescence being satisfactorily established.

Mumps (Epidemic Parotitis).—For not less than two weeks from the commencement—provided that one clear week has elapsed since the complete subsidence of all swelling.

Scarlatina (Scarlet Fever).—For not less than four weeks from the date of the appearance of the rash, until convalescence is completed, and there is no sore throat, discharge from the ear or nose, suppurating or recently enlarged glands, or eczematous patches. (With regard to Albuminuria, *vide* footnote p. 27.)

Variola (Smallpox).—Until every scab has fallen off and the skin lesions have all healed.

Pertussis (Whooping-Cough).—Until the characteristic spasmodic cough and the whooping have ceased for at least two weeks; or in cases of persistent whooping, for not less than four weeks from the commencement of the spasmodic cough.

TABLE OF INCUBATION AND QUARANTINE.

	Incubation.	Quarantine.
Varicella (Chickenpox)	11–19 ...	20 days
Diphtheria	2–10 ...	page 21
Rubella (German Measles).....	9–18 ...	20 days
Epidemic Roseola (Rose Rash)	9–18 ...	20 ,,
Morbilli (Measles).	10–14 ...	16 ,,
Mumps (Epidemic Parotitis)...	14–23 ...	24 ,,
Scarlatina (Scarlet Fever)	1–8 ...	10 ,,
Variola (Smallpox).....	10–14 ...	16 ,,
Whooping Cough (Pertussis)...	7–19 ...	21 ,,
Sore Throats	24–36 hours	Until well

The incubation period is difficult to determine in the following maladies, but the periods given have been obtained from the latest available evidence. No quarantine advised unless the disease exists in epidemic form :

	Incubation.
Cerebro-spinal fever..	3–5 days, most cases 3 days.
Poliomyelitis (acute)	Very variable, usually within 2–10 days.
Polioencephalitis	Probably the same as acute poliomyelitis.
Encephalitis Lethargica	Varies considerably, but 2 days to 2 weeks comprises most cases.

A CODE OF RULES

FOR THE

PREVENTION

OF

INFECTIOUS & CONTAGIOUS DISEASES IN SCHOOLS

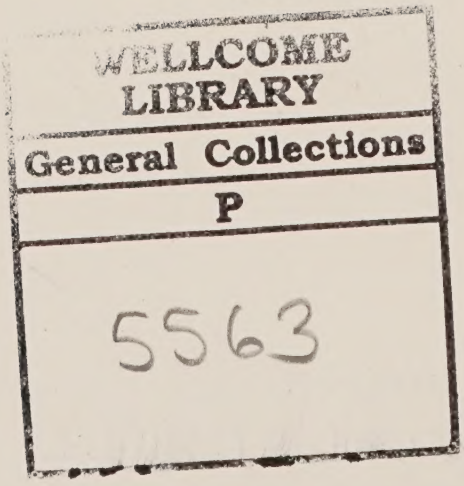
ISSUED BY

THE MEDICAL OFFICERS OF SCHOOLS ASSOCIATION

EIGHTH EDITION

LONDON
J. & A. CHURCHILL
7 GREAT MARLBOROUGH STREET
1923

PRINTED BY
ADLARD AND SON AND WEST NEWMAN, LTD.,
LONDON AND DORKING.


WELLCOME
LIBRARY
General Collections
P
5563

Medical Officers of Schools Association.

Founded 1884.

Presidents.

1884.
Surgeon-Gen. SIR G. J. H. EVATT, K.C.B., A.M.S., M.D.

1885.
THOMAS FULLER, M.D., M.R.C.S.

1886–9.
SIR WILLIAM SAVORY, Bart., F.R.C.S.

1890.
JAMES ANDREW, M.D., F.R.C.P.

1891–4.
WILLIAM HOWSHIP DICKINSON, M.D., F.R.C.P.

1895–7.
EUSTACE SMITH, M.D., F.R.C.P.

1898–1900.
HOWARD MARSH, F.R.C.S.

1901–1904.
SIR JAMES GOODHART, LL.D., M.D., F.R.C.P.

1904–1908.
SIR THOMAS BARLOW, Bart., K.C.V.O., M.D., F.R.C.P., D.Sc.

1908–13.
CHARLES E. SHELLY, M.A., M.D., M.R.C.P.

1914–17.
FREDERICK E. BATTEN, M.D., F.R.C.P.

1917–21.
JAMES KERR, M.A., M.D., D.P.H.

1921.
REGINALD C. ELMSLIE, M.B., M.S., F.R.C.S.

Honorary Members.

ALLBUTT, SIR T. CLIFFORD, K.C.B., F.R.S., LL.D., M.A., M.D., F.R.C.P., Regius Professor of Physic, University of Cambridge.
BELL, The Rev. G. C., M.A., late Head Master, Marlborough College.
LYTTELTON, The Rev. The Hon. E., M.A., late Provost, Eton College.
TEALE, PRIDGIN, M.A., M.B., F.R.C.S., Member General Medical Council, and Consulting Surgeon, Leeds General Infirmary.
WARRE, The Rev. E., C.B., M.V.O., D.D., late Head Master, Eton College.
WELLDON, The Right Rev. Bishop J. E. C., D.D., late Head Master, Harrow School.

COUNCIL, 1922.

President.

ELECTED.

1921. ELMSLIE, R. C., M.B., M.S., F.R.C.S., Orthopædic Surgeon, St. Bartholomew's Hospital.

Past Presidents.

SHELLY, C.E., M.A., M.D., M.R.C.P., Consulting Medical Officer, Haileybury College.

KERR, JAMES, M.A., M.D., D.P.H., Medical Research Officer, L.C.C.

BARLOW, Sir THOMAS, Bart., K.C.V.O., M.D., D.Sc., LL.D.

Vice-Presidents.

1921. GRIPPER, WALTER, M.A., M.B., M.R.C.S., Royal Female Orphan Asylum, Beddington.

1921. THOMAS, C. J., M.B., B.Sc., D.P.H., Public Health Department, L.C.C.

1921. HARMAN, N. B., M.A., M.B., F.R.C.S., Ophthalmic Surgeon, West London Hospital.

1922. MUMFORD, A. A., M.D., Hon. Physician, Children's Northern Hospital, Manchester.

1922. LEMPRIERE, L. R., M.B., M.O., Haileybury College.

1922. WALLIS, C.E., M.R.C.S., L.R.C.P., L.D.S., Dental Surgeon, King's College Hospital.

1922. RIVIERE, CLIVE, M.D., F.R.C.P., Physician, East London Hospital for Children.

1922. SIMEY, A. I., M.D., M.R.C.P., Rugby.

1922. NASH, ELWIN H. T., M.R.C.S., L.R.C.P., D.P.H., M.O.H. and S.M.O., Heston Hounslow Urban District Council.

1922. SHRUBSALL, F. C., M.A., M.D., F.R.C.P., D.P.H., Public Health Department, L.C.C.

Honorary Treasurer.

ELMSLIE, R. C., M.B., M.S., F.R.C.S., Orthopædic Surgeon, St. Bartholomew's Hospital.

Honorary Secretaries.

ATTLEE, W., M.A., M.D., M.R.C.S., Member, Eton College Board.

CHAIKIN, G., B.A., M.R.C.S., L.R.C.P., Public Health Department, L.C.C.

LANGMEAD, F. S., M.D., F.R.C.P., Professor of Medicine, University of London; Physician, St. Mary's Hospital, Paddington.

Honorary Auditors.

THOMAS, C. J., M.B., B.Sc., D.P.H., Public Health Department, L.C.C.

KERR, JAMES, M.A., M.D., D.P.H., Medical Research Officer, L.C.C.

Members of Council.

1921. HUTT, C. W., M.A., M.D., B.C., D.P.H., M.O.H., Holborn.

1921. GOWDY, Miss ANNIE, M.B., Public Health Department, L.C.C.

1921. BRINCKER, J. A. H., M.A., M.B., D.P.H., Public Health Department, L.C.C.

1922. YOUNG, G. W. E., M.D., M.O.H., Middlesex.

1922. FRIEND, G. E., M.A., M.R.C.S., L.R.C.P., M.O., Christ's Hospital.

1922. CLOW, Mrs. ALICE, M.D., B.Sc., Medical Inspector, Ladies' College, Cheltenham.

PREFACE TO THE EIGHTH EDITION.

With the considerable increase in attention to health in recent years, and an experience of disease which has become more exact, a new Edition of this Code has been called for. It has been carefully revised, and it is believed that it will deserve no less confidence than that which has been accorded to the previous editions which have covered a period of nearly forty years.

The index to this edition has been prepared by Mr. W. A. JEMMETT, to whom the Council wishes to express its sense of indebtedness.

R. C. ELMSLIE, *President.*

11, CHANDOS STREET,
CAVENDISH SQUARE;
London, W. 1, 1923.

PREFACE TO THE FIRST EDITION.

In bringing this Code of Rules before the general public and the Medical and Scholastic professions in particular, the Medical Officers of Schools Association desire to say a few words as to its compilation.

On the formation of the Association, in 1884, one of the most urgent matters which forced itself to the front, as claiming immediate attention, was the need for the general adoption of more definite rules for guarding our great educational establishments from the outbreak and spread of preventible infectious disease.

With this object an attempt was made to ascertain the rules and customs which are at present enforced in such cases, by circulating to every school of any importance in the country an elaborate series of questions covering the ground of this inquiry.

The replies thus obtained proved very interesting, and contained much valuable material; at the same time they revealed wide differences of procedure in different institutions when dealing with the same conditions of disease, and, in some instances, a considerable laxity of precaution. Nothing could more clearly demonstrate the necessity for some definite and generally recognised standard of School Hygiene than the curiously divergent character of many of the answers furnished in response to our paper of questions on the commoner epidemic diseases.

In the course of their deliberations on the information thus collected, the Association have embodied opinions and suggestions from many special authorities on the several questions dealt with. It is hoped that the result of these labours may prove no less useful to parents and guardians, who deal with the home life of the children, than to the school authorities, since without the sympathy and intelligent co-operation of the

former no real progress can be made in this great department of preventive medicine, which is fraught with so much benefit to the community at large.

The Medical Officers of Schools Association cannot allow this Code to go forth to the public without placing on record the great debt of gratitude which they owe to their indefatigable Secretary, Dr. ALDERSMITH, the Medical Officer of Christ's Hospital. This Code is to a very large extent based on the valuable paper on "*The Preventive Treatment of Infectious Diseases in Public and High Schools*," read by him at *The Conference on School Hygiene*, at the International Health Exhibition. The extensive correspondence involved in communicating with a very large number of schools and of individuals in all parts of the Kingdom has been entirely in his hands; upon him devolved the heavy labour of comparing and collating the replies received from the various authorities consulted; and upon him, too, has fallen the duty of preparing this work for the press.

C. J. H. EVATT, M.D.,
Surgeon-Major Army Medical Staff,
President, M.O.S.A.

WOOLWICH;
January, 1885.

CONTENTS.

LIST OF THE
OFFICERS OF THE MEDICAL OFFICERS OF SCHOOLS ASSOCIATION.

PREFACE.

RULES FOR THE PREVENTION OF INFECTIOUS AND CONTAGIOUS DISEASES IN SCHOOLS.

PAGE

SECTION I.—GENERAL HYGIENE: Drainage, &c.—Separate establishments for younger and for older pupils—One Medical Officer with undivided responsibility; his powers—Regular Inspection of School Premises and Return of Sickness—Water Supply—Cisterns, &c.—Milk Supply—Laundry 11

SECTION II.—THE INFIRMARY AND THE SANATORIUM: Their construction, arrangement, and management—A separate building for infectious cases desirable—Arrangement and heating of Infectious Wards—The "Sick Room" 16

SECTION III.—MEDICAL EXAMINATION OF SCHOLARS ON ADMISSION, &c.: Health Certificate required on admission of pupil into School—Personal Examination of new pupils—Certificate on return to School after the holidays—Dangers of Exeats—Quarantine after exposure to different kinds of infection—Disinfection to be carried out at the beginning of Quarantine 18

SECTION IV.—GENERAL PRECAUTIONS AGAINST THE INTRODUCTION AND SPREAD OF DISEASE: Epidemic Disease in neighbouring Towns—In the homes of Day Pupils—Infectious illness in a Master's house or family—Immediate notice to be given of any infectious illness occurring in the families of servants, tradesmen, &c. 23

PAGE

SECTION V.—MEASURES TO BE ADOPTED WHEN AN INFECTIOUS DISEASE HAS APPEARED IN A SCHOOL: Prompt removal and isolation of a first case—Management of cases in the Infectious Wards—Removal and disinfection of the patient's bedding and clothes—Disinfection of the "Sick Room"—Disinfection of Bedding, &c., from the Infectious Wards—Ambulance—Patients to remain isolated until free from infection—Management of doubtful cases of scarlet fever—How soon may a patient return home or to School on recovery from an infectious disease?—Serious illness of pupils to be promptly notified to parents—Dispersion of a Boarding School on account of illness is only rarely advisable: circumstances in which this may become necessary—Dispersion of Day Schools—Timely notice should be given to the parents—The duties of School Authorities and of Parents and Guardians are reciprocal 24

APPENDIX A.—FORMS OF CERTIFICATES SUGGESTED FOR USE WITH REFERENCE TO THE PREVENTION OF INFECTIOUS DISEASES IN SCHOOLS: Health Certificates—Certificates for use after illness and after exposure to infection 33

APPENDIX B.—NOTIFICATION OF INFECTIOUS DISEASES 38

APPENDIX C.—DISINFECTION 39

INDEX 45

A CODE OF RULES.

FOR THE

PREVENTION

OF

INFECTIOUS AND CONTAGIOUS DISEASES IN SCHOOLS

ADOPTED BY

THE MEDICAL OFFICERS OF SCHOOLS ASSOCIATION.

SECTION I.

GENERAL HYGIENE.

I. GENERAL HYGIENE.—All the **sanitary arrangements** of the school should be inspected by a competent person half yearly, and any defect remedied as soon as possible.

Amongst other essentials, the following points require special attention, viz. :—

1. That all foul water **drains** should preferably be of iron piping; they must be efficiently ventilated, and cut off from the sewer by a disconnecting chamber. Drainage.

2. That all **soil or vent pipes** be fixed outside the buildings; that they be efficiently ventilated and properly disconnected from the sewer. Soil pipes.

That the **joints** of all soil and drain pipes and their branches are air- and water-tight. Joints.

Closets. 3. That the **closets** be of a wash-down type which prevents the accumulation of sediment or of sewer-gas. It is desirable that closets should be placed in detached or semi-detached buildings efficiently ventilated, and not in the *basement* of the school.

Drains. 4. That no **drains** pass under the school buildings, unless this be unavoidable. In such a case there should be iron pipes, laid so as to be accessible for inspection or repair.

Earth closets. In localities where there is no efficient drainage, **earth closets** may be adopted, and should be placed in detached buildings.

Cesspools. In exceptional cases, where a **cesspool** must exist, this should be placed no nearer to a dwelling-house than fifty yards. It must be water-tight, efficiently ventilated, and so constructed as to permit of its being emptied without nuisance.

Overflow and waste pipes. 5. That all **overflow, rainwater,** and **waste pipes** be properly trapped and disconnected.

Dust-bins. 6. That no fixed **dust-bins** be permitted, but that each day's dust and refuse be removed to a distance, and efficiently dealt with.

Drains to be flushed. 7. That all **drain gullies** be kept clear and frequently flushed at regular intervals, including the holidays; otherwise the water in the traps may dry up, and drain air thus escape.

Plans. 8. That an accurate plan of the drainage and of the water, gas and electric light mains should be provided, and that a copy of this should always be accessible, and kept up to date.

Separate establishments for younger and for older pupils. II. SENIOR AND JUNIOR SCHOOLS.—In schools where there is a number of pupils varying between wide limits of age, it is advantageous to have **two distinct establishments** in separate localities, one for pupils under eleven or twelve, and another for pupils above that age. By this arrangement epidemics (especially of measles) may generally be restricted to the junior school;

and thus the more important work of the senior school does not suffer.

III. **MEDICAL RESPONSIBILITY.**—A most important safeguard in dealing with infectious disease in schools and in securing their prevention is **undivided medical responsibility.**

Undivided Medical responsibility.

1. The entire school population, including all masters and servants, and their families, should be under the personal supervision of a single medical authority, whether this consists of the School Medical Officer or (as may be advisable in very large schools) of a Medical Board specially constituted to that end. This Authority appointed by and only responsible to the Governing Body* should possess full control regarding the admission into the school of all boys who are known to have recently had any Illness, or to have been exposed to Infection ; and also over the whole arrangements for Quarantine and Disinfection, and should have power to act immediately if any sanitary measures are urgently needed. Unless equipped with such powers and able to speak with a single voice the Medical Authority of a school is not in a position to detect every weak point in the line of sanitary defence, and is unable to appreciate the earliest warnings of developing disease or to take prompt measures for restricting its extension with any assurance of success.

How to be provided.

2. The Medical Officer of the school should **periodically inspect** the entire school premises ; and in the case of Public Schools, should report to the Governing Body any alterations desirable from a sanitary point of view.

Medical inspection of premises.

3. An **Annual Report including a return** of school illnesses from the Medical Officer to the Governing Body of the School is very desirable.

Annual return of sickness.

* Whatever its actual composition in different cases, the Governing Body is here taken to include the Head Master of the School.

Water.

IV. **WATER SUPPLY.**—Whatever its source, the **water supply** must be above suspicion.

Drinking water.

1. Whenever possible, the **drinking water** should be obtained from pipes on a constant service; or, if the supply must be intermittent, from cisterns distinct from those supplying water-closets, urinals, and slop sinks.

Cisterns.

2. All **cisterns** (which should be suitably placed, properly covered and easily accessible) must be frequently inspected and periodically cleansed.

Wells.

3. When well-water is used, the surroundings, and the possibility of contamination by cesspools, drains, surface washings, and deposits of foul matter in its vicinity, ought to be investigated. It is also advisable to have the water periodically analysed (chemically and bacteriologically)—and this not always at the same season of the year.*

Filters.

4. If **filters** be used, they should be fitted with candles of the sterilising type, and care should be taken that they are in good working order, with neither cracks nor flaws.

Milk and Food.

V. **MILK AND FOOD SUPPLY.**—**The milk** should be obtained from a trustworthy source, preferably from a dairy under the control of the School Authorities. Due care must be exercised in relation to all the details of its delivery to, and its storage on, the School premises.

The school **dairy**, the dairy farm, **the milk** and the **food supplies** and stores generally, should be inspected at intervals by the Medical Officer of the school, who should also visit the dining halls and kitchen from time to time so as to satisfy himself that the food is properly cooked and served. The Dietaries, their balance and composition, in respect of calories,

* In cases in which the slightest suspicion of contamination exists, an analysis ought to be made at least every month.

protein content and vitamines, the variation in meals, their number and hours, should be considered and investigated by the School Medical Officer.

The milk supplied to schools should be of a standard of purity not lower than Grade A milk as defined in the Milk and Dairies Acts of 1915 and 1922.

The contract for the supply of milk to schools, moreover, should always include a penal clause containing a proviso that milk can be purchased elsewhere and charged against the contractor if at any time the milk supplied by him is proved on delivery not to be "of the nature, substance and quality demanded."

A clause to this effect will be found in the recommendations issued by the King's Hospital Fund for London with reference to the framing of contracts.

VI. **LAUNDRY.**—Every large school should have its own **laundry.** If this be impossible, precautions should be taken to prevent linen from other sources being washed with the school linen. Laundry.

SECTION II.

THE INFIRMARY AND THE SANATORIUM.

Infirmary.

VII. **INFIRMARY.**—A large school should possess a good detached **Infirmary**, to which *all** cases of illness should be sent, and in which infectious cases can be isolated. It should be large enough to provide ample accommodation, with sufficient cubic space and good ventilation. Whatever the construction and arrangements it is of the utmost importance that the *infectious wards* (with nurses' apartments, bath, lavatory, and small kitchen) be isolated as far as possible from the rest of the school buildings.

Separate building for infectious diseases.

VIII. **SANATORIUM.**—Whenever practicable, there should be a separate building (**Sanatorium**) for infectious diseases.

Infectious wards.

1. If there be no sanatorium the **infectious and observation wards** should be at the *top* of the Infirmary, and approached by a separate well-ventilated staircase.

2. One of the **wards** should always be in readiness. During the cooler months it should be kept warmed. This can be managed by open fire-places or a suitable form of gas stove. A system of warming by hot-water pipes provides for keeping the wards at a suitable temperature. It is important

* Unless a Sanatorium exists for the reception of cases of infectious illness.—*Vide* VIII, *infra*.

that lavatories and water-closet should be kept sufficiently warm and the mattresses aired and ready for use.

3. It is necessary to supply each class of infectious patients with a **separate set of books** and **games** for their exclusive use, which must subsequently be destroyed if they cannot be disinfected (*vide* Appendix C). Games and Books.

IX. **SICK-ROOM.**—In small schools there ought always to be one or more "**sick-rooms**" sufficiently large and well ventilated, *situated at the top of the house*, and isolated as completely as possible. Sick-room.

1. Any pupil suffering from headache, sickness or sore throat should be sent to the Infirmary or Sanatorium without delay. Pupils, when ill, should be required to report themselves **at once** to the House Master, Matron, or Medical Officer. Slight ailments to be reported.

X. In all cases adequate provision should be made for safeguarding buildings and their occupants from fire. Fire.

SECTION III.

MEDICAL EXAMINATION OF SCHOLARS ON ADMISSION, ETC.

Certificates required on admission.

XI. ENTRANCE CERTIFICATES.—A* **Certificate** should be required on the entry of each pupil, signed by the parent or guardian not earlier than the day before the admission, stating that, "to the best of his or her knowledge and belief, the pupil has not, for at least three weeks, been exposed to any infectious disease, or entered any house where such disease existed" (and then should follow a list of these diseases, so that no mistake can be made). If this assurance cannot be given, notice must at once be forwarded to the school authorities. The pupil, *his or her clothes, etc., having been disinfected,*† should then be sent away to some house free from infection for quarantine, in accordance with the school regulations, and *the disinfection of the pupil and of the clothes should be repeated at the end of the specified time of quarantine.*

1. It is also desirable to request immediate notice to be given to the School Authorities by the parents or guardians

* Vide Appendix A.

† This is of especial value after exposure to scarlet fever, smallpox, diphtheria, chickenpox or enteric fever.

in the event of any case of infectious disease occurring in the house within three weeks after the entry, or the return, of a pupil to school. A request to this effect should be printed on the certificate form. (See pp. 34 and 35.)

Primary or Entrance certificate.

2. The infectious diseases from which the pupil has already suffered should be recorded on this **primary certificate,** and the paper kept for future reference.

Examination on admission.

3. In all schools it is advisable for the Medical Officer to make a **physical examination** of each pupil on entrance. In all junior schools, a special examination of the scalp should be made for **Ringworm,** and in the case of girls, for nits.

Vaccination and re-vaccination.

4. An examination should also be made for vaccination marks, and if these be absent or unsatisfactory, immediate vaccination is called for. In every case, when the pupil has reached the age of puberty, re-vaccination should be insisted on.

Trachoma.

5. It may be advisable to examine the eyelids of every child on admission to a school, so as to exclude cases of **Trachoma.** In certain institutions—for example, those of the parochial type—such inspections should be repeated at intervals of a few months, and also in cases from abroad, as Egypt, India, etc.

And at the beginning of each term.

XII. **TERM CERTIFICATES.**—When a pupil goes home for the holidays, a **Certificate Form** should be sent to the parents or guardians (see Form No. II, p. 35), accompanied by a notice stating that the certificate, duly signed, must be presented by the pupil on returning to school. If the pupil fall ill, or if he be exposed to any infection during the vacation, *immediate* notice of the facts must be sent to the School Authorities, and on no account is the pupil to return to school until after permission has been obtained from them. Those pupils who return

without their certificate should at once be sent to the Infirmary, and there examined by the Medical Officer, who should have the power to take whatever steps he considers desirable.

Exeats.

During term-time pupils are apt to contract infectious diseases when on **"exeat."** Parents should, therefore, be warned by the School Authorities not to have their children home when there is even a suspicion of infectious disease in their own homes, nor should the children be allowed to enter any house where such exists. When a pupil has been exposed to any infection, the necessary quarantine, with disinfection, should be rigidly insisted upon. (See pp. 20, 21 and 22.)

Length of quarantine.

XIII. **QUARANTINE.**—The following **quarantine times,** dating from exposure to infection, may be considered safe.

Varicella (Chickenpox)	20	days'	quarantine
Rubella (German Measles)*	20	,,	,,
Epidemic Roseola (Rose Rash)	20	,,	,,
Morbilli (Measles) ...	16	,,	,,
Mumps (Epidemic Parotitis)	24	,,	,,
Scarlatina (Scarlet Fever)	10	,,	,,
Variola (Smallpox) ...	16	,,	,,
Pertussis (Whooping-Cough)	21	,,	,,

* The use of this term (German Measles) might be discontinued with advantage, so as to obviate its confusion with (true) Measles.

Diphtheria.—When a *bacteriological examination* of the throat and nasal mucus has been carried out with negative results on three successive occasions at intervals of two days, no antiseptic applications having been made to the throat or nose for at least three hours before taking the swab. A similar rule applies to every nurse who has been attending on a case of diphtheria, and a like procedure should be followed before she resumes her ordinary duties.

The diphtheria bacilli harboured by "carriers" are often found to be avirulent when tested on guinea-pigs. Such carriers may then be considered innocuous.

During an epidemic the Schick test will indicate susceptible persons, who can then be almost permanently protected against attack by the use of toxin-antitoxin.

Cerebrospinal fever, Poliomyelitis, Polioencephalitis and **Encephalitis Lethargica** are notifiable diseases, which have recently recurred in limited outbreaks. They affect the nervous system, and are serious diseases, with a protracted convalescence. Cases recovering will not be able to return to school till long after any risk of infectivity is past. The risk of spread is very small. Rarely is a second case found in the same family. As abortive or missed cases may possibly convey infection whilst going about in school they must be borne in mind; and if suspected, they should be segregated pending further observation.

Glandular Fever.—An infectious fever which usually affects young children and may occur in epidemic form. It is characterised by sudden onset with fever, nausea or sickness, followed by pain on movement of the head; sometimes also in the chest or abdomen.

The tonsils are red and swollen; this is followed in two to three days by enlargement and tenderness of the lymphatic glands which may be present for two to three weeks.

It is important to segregate sufferers until all swelling has subsided, treat the sufferer to prevent suppuration of the glands, and not to mistake the condition for mumps.

The incubation period, though not definitely fixed, is short.

Sore Throats (including tonsillitis, quinsy, ulcerated or septic throat) are symptomatic of bacterial infection of the nasopharynx, and include the common cold. They are all infectious in some degree. Sore throat may, however, be the first sign of serious diseases such as scarlatina, diphtheria, measles or influenza. It is therefore wise to suspect every cold or sore throat, and treat it seriously, especially if there is any unusual prevalence of disease.

Ringworm may affect the smooth hairless skin, when it is easily cured, or may affect the scalp or beard, when it is very difficult to remedy. Every case of scurf of the scalp in children should be suspected. The commonest variety of Ringworm is the small spored, which rarely affects the smooth skin or that of adults. It usually ceases with puberty. Bald patches are exceptional in this common type.

Disinfection at home.

Home Disinfection should be supplemented by personal disinfection of the pupil, and of the clothes, books, etc., brought back by him, immediately on his return to school. (See p. 18.)

A previous attack of an infectious disease may in some instances be considered to have conferred immunity, but does not justify the omission of the disinfection of person and clothes after exposure to the infection.

SECTION IV.

GENERAL PRECAUTIONS AGAINST THE INTRODUCTION AND SPREAD OF INFECTIOUS DISEASE.

Neighbouring towns.

XIV. **INFECTIOUS DISEASE** existing in a neighbouring town is apt to be introduced into a school by intercourse with the townspeople. It is advisable to place the town "out of bounds" if any infectious disease be prevalent there.

Day pupils.

1. **Day pupils** may introduce infection into a boarding school. Parents should therefore be specially warned not to send their children to school if there be any suspicion of infectious disease existing in their homes. Infectious complaints, particularly variola or varicella, may be communicated by the clothes of those who have been in contact with infected persons.

Infectious disease in masters' houses.

2. A case of infectious disease occurring in the **family of a master** or of any **official** connected with the school should immediately be reported to the School Authorities, and the patient should be isolated. The master or officer should undergo personal disinfection before resuming work in the school, and—if deemed necessary—live away from and not visit his house so long as infection persists there (particularly if the case be one of scarlet fever, diphtheria, smallpox, or chickenpox).

Notice of illness to be given at once to the Medical Officer.

3. All **Servants, tradesmen,** or other persons having access to the school premises should be required to give immediate notice of the outbreak of infectious disease among their families or workpeople to the School Authorities, and to abide by the instructions of their Medical Officer.

SECTION V.

MEASURES TO BE ADOPTED WHEN INFECTIOUS DISEASE APPEARS IN A SCHOOL.

Removal and isolation.

XV. REMOVAL AND ISOLATION.—Directly a case of infectious disease has been recognised* it should be isolated in the **infectious ward** or in the **Sanatorium.** (*Vide* Rule VIII.) Wherever possible the patient should be removed at once to a Fever Hospital.

1. The Ambulance should be disinfected immediately after removing any infectious patient, clothing or bedding.

2. One of the ordinary nurses should take sole charge; or a special fever nurse may be obtained for this purpose.

Isolation of nurses in infectious ward.

3. **The nurses** in the infectious ward or Sanatorium must be isolated from the nurses and servants in the Infirmary.

4. **The food,** if not prepared in a separate kitchen, should be placed outside the door of the ward, and afterwards taken in by the nurse in charge of the patient.

Scraps from ward.

5. Scraps and **refuse** of all kinds should be placed in a suitable watertight and closed receptacle and taken away to be **burned immediately.** The **crockery** should be disinfected before leaving the ward. All possible precautions should be taken to prevent the spread of infection, which may occur through the neglect of apparently trivial details.

Letters, etc.

6. The nurses in charge of the infectious wards or Sanatorium should take care that patients do not throw **paper** balls, **letters**, or anything out of the windows.

* For the *Notification* of cases of infectious disease, see Appendix B, p. 38.

7. The writing of letters should be forbidden. Postcards, *if allowed at all*, should be disinfected* before they are posted.

8. Cats, dogs and other animals should be excluded from the Sanatorium premises.

XVI. **REMOVAL OF BEDDING, Etc.**— The **bedding** (if not removed with the patient to the infectious ward or Sanatorium), together with clothes, books, and everything that is likely to harbour infection, should at once be disinfected. The sleeping place occupied by the pupil in his dormitory should also be disinfected. (*Vide* Appendix C.)

Removal of bedding and clothes for disinfection.

Notice should at once be given to the matrons or others in charge of the pupils to watch carefully for any symptoms of illness, and to bring any child looking ill under the notice of the School Medical Officer.

Notice to Matrons.

XVII. **DISINFECTION OF ROOM.**— In each case, after the patient has been isolated, the room temporarily occupied by the pupil before he entered the Sanatorium should be disinfected (*vide* Appendix C) before any other pupil is allowed to enter it.

Disinfection of sick-room.

XVIII. **DISINFECTION OF BEDDING.**— The **mattresses and bedding** which have been used in any infectious case should be disinfected before being again employed. All linen should be disinfected before it is sent to the laundry.

Of bedding and linen in the infectious wards.

XIX. **ISOLATION UNTIL FREE FROM INFECTION.**—All patients must be retained in

Isolation until free from infection.

* *Vide* Appendix C, p. 40.

the infectious ward of the Infirmary, or in the Sanatorium, until free from infection (*vide* Rule XXI), and, before leaving, they and their clothes and possessions must be disinfected.

A general disinfection of all wards which have been occupied should be carried out at the end of the epidemic.

Doubtful cases of scarlet fever.

XX. **DOUBTFUL CASES OF SCARLET FEVER.**—One of the most anxious and difficult of the problems which confront the Medical Officer concerns the diagnosis and management of **doubtful cases of scarlet fever.** Only those who have had actual experience can realise to the full the frequency with which such cases occur, and the great difficulty of dealing with them. The ideal method would be to isolate each suspicious case in a separate room, with a separate nurse, and keep it under observation. But this is seldom possible. All such cases may be placed in a large, well-ventilated ward, careful observation being maintained with a view to the immediate isolation of any case developing characteristic symptoms.

Bacteriological examination of throat and nose swabs may serve to secure the early recognition cases of (*a*) diphtheria and (*b*) diphtheria complicating scarlet fever.

No doubtful cases should be sent back to the dormitories.

XXI. **When Free from Infection.**—With regard to that most important question, "When may a pupil who has had an infectious disease go home or rejoin the school?" the following are safe rules to adopt, provided that the patient has had a thorough cleansing in a hot bath and clothes disinfected.* (*Vide* Appendix C.)

How soon a patient may return home or to school after having had an infectious disease.

Varicella (Chickenpox).—When every scab has fallen off, particular attention being paid to the scalp. There should be no sores, scratches or abscesses.

Chickenpox.

Diphtheria.—In no case in less than four weeks, provided that convalescence is completed, that there is no longer any sore throat, or any abnormal discharge from the throat, nose, ears, or eyes, no cutaneous pustulation and no albuminuria,† and that at least three successive bacteriological examinations of the pharyngeal and nasal mucus for the specific bacillus have given consistent negative results, each examination having been made not less than three hours after the discontinuance of local antiseptic applications.

Diphtheria.

Rubella (German Measles) and **Epidemic Roseola (Rose Rash).**—In not less than seven

German measles; Roseola.

* The periods named in this connection refer to freedom from infection; it is obvious that a patient, if free from infection, might be sent home from school, or leave home for change of air before his health was so re-established as to justify his resuming work at school.

† With regard to persistent albuminuria, each case must be judged on its own merits.

days from the date of the appearance of the rash, provided there is no persistence of nasal or other symptoms.

Measles.

Morbilli (Measles).—In not less than two weeks from the date of the appearance of the rash, provided convalescence is satisfactorily established. It must be understood that this period refers only to the probable persistence of infectivity. It may be advisable for the sake of the patient to prolong the convalescent period considerably.

Mumps.

Mumps (Epidemic Parotitis).—In not less than two weeks from the onset, provided that one clear week has elapsed since the complete subsidence of all swelling. Mumps may sometimes affect one side of the face only, spreading to the other side after several days, so that complete subsidence should be dated from the gland last affected.

Ophthalmia.

Ophthalmia.—Every case of **acute conjunctivitis** should be isolated, pending precise diagnosis. The latter can in most instances be made with certainty only by a bacteriological examination of the discharge from the conjunctiva.

Trachoma.

In **chronic conjunctivitis** a distinction should be made between two conditions that somewhat resemble one another, namely, Follicular conjunctivitis and Trachoma (Granular lids). The former is common among children of the poorer class, and is not a serious ailment. The latter is a most serious infective disease, always calling for prolonged isolation and

special treatment. If neglected it is apt to affect the cornea, and thus to damage vision.

Ringworm (*of the head*).—When—the *whole* scalp having been examined in a good light and any suspicious spot scrutinised with a lens—not one broken-off hair showing any of the forms of ringworm fungus is to be detected on *careful* microscopic examination. Ringworm.

It is sometimes considered that ringworm is cured when the hair commences to grow on the affected areas, but this is not necessarily true, for it frequently happens that diseased broken-off hairs remain; the malady may thus persist for months or years. It is often very difficult to detect the short diseased stumps, which protrude only an eighth of an inch or less, and it is important not to mistake closely-cut *healthy* hairs for diseased stumps. Any localised thinness of the hair, redness, scurf or scaliness of the scalp is suggestive of persistent infection.

Scarlatina (Scarlet Fever.)—In not less than four weeks from the date of the appearance of the rash, provided convalescence is completed, and there is no sore throat, discharge from the ear or nose, suppurating or recently enlarged glands, or eczematous patches. (With regard to albuminuria, *vide* footnote, p. 27.) Scarlet fever.

Variola (Smallpox).—When every scab has fallen off, and the skin lesions have all healed. Smallpox.

Pertussis (Whooping-Cough).—When the characteristic spasmodic cough and the whooping have ceased for at least two weeks; or in cases of persistent whooping in not less than four weeks from the commencement of the spasmodic cough. Whooping-cough.

Parents to be promptly informed of their children's illness.

XXII. **NOTICE TO PARENTS.**—In every case of serious illness the **parents** or **guardians** of the pupil should at once be informed. It is most desirable, in replying to inquiries made by parents with respect to any case of serious illness occurring in a school, that the precise terms used by the Medical Officer in describing the nature or the progress of the malady should be communicated, either directly by him or through the House-master.

Breaking up a boarding school is only rarely advisable.

XXIII. **THE DISPERSION OF A SCHOOL** on account of an outbreak of infectious disease is always a serious step to take, and should very rarely be required. It may lead to a wide-spread distribution of the disease. If a serious outbreak of scarlet fever or of measles, especially if the cases be of a malignant type, or if an outbreak of enteric fever, or of diphtheria occur, notice should be sent to the parents or guardians of all the pupils as yet unaffected, thus giving them the option of removing their children, should they see fit to do so.

In the opinion of the Association* a serious outbreak of infectious disease in a school affords a sufficient justification for the temporary removal of healthy children by their parents or guardians, should they see fit to take this step; but the onus of removing the pupils should rest with the parents, and not with the School Authorities. The latter should rarely go beyond advising parents to take away their children.

* One of the "Special Resolutions" passed by the Council on July 22nd, 1886, and subsequently confirmed by the Association.

If pupils are to be sent home, it is necessary to give the parents sufficient time to make the needful arrangements for isolating them ; parents should also be informed by the School Authorities of the period of incubation of the illness ; and, whenever possible, the clothes should be disinfected before the pupils leave the school.

It is necessary to give time for isolating pupils.

XXIV. **DUTIES OF SCHOOL AUTHORITIES.**—Just as it is incumbent on parents and guardians to do all in their power to prevent infectious diseases from entering schools, so it is the duty of School Authorities to take every possible precaution that infectious diseases are not carried by the pupils from the school to their homes. Therefore, if any infectious disease is prevalent in a school at the end of a term, notice to that effect should be sent to all the parents, stating the nature of the disease and its period of incubation, in order that they may isolate their children on their return home. Before he leaves for home, every pupil should be inspected by the Medical Officer (the temperature being taken if necessary), and any suspicious cases detained and isolated.

Duty of school authorities.

Through the neglect of this simple precaution, children who have been exposed to infection at school may be taken to the sea-side or elsewhere at the end of term, and should they develop the disease, their parents thus put to much unnecessary trouble and expense.

Published in accordance with a Resolution passed at a General Meeting of the Medical Officers of Schools Association, on January

7*th*, 1885. *Second Edition*, 1886. *Third and Revised Edition*, 1891. *Fourth and Enlarged Edition*, 1899. *Fifth and Enlarged Edition*, 1902. *Sixth Edition*, 1910. *Seventh Edition*, 1915. *Eighth Edition*, 1923.

MEMBERS OF REVISION COMMITTEE, 1922.

R. C. ELMSLIE (President).
W. ATTLEE.
J. A. H. BRINCKER,
G. CHAIKIN,
JAMES KERR,
F. S. LANGMEAD,
E. H. T. NASH,
C. E. SHELLY,
F. C. SHRUBSALL,
C. J. THOMAS.

APPENDIX A.

The following Forms of Certificates are recommended with Reference to the Prevention of Infectious Diseases in Schools.

HEALTH CERTIFICATE. (FORM NO. I).

[*To be presented before admission into a school.*]

This certificate must be filled up and signed by the Parent or Guardian not earlier than the day before the child is sent to the school. The suppression of important information as to past or present health, or as to exposure to infection, is liable to be regarded as a breach of contract.

Name ..... Age.....

1. Has the pupil been successfully vaccinated? ..... If so, when?.....

2. Has the pupil had—

Chickenpox? ..... If so, when?.....
Diphtheria? ..... If so, when?.....
German Measles? ..... If so, when?.....
Epidemic Roseola? ..... If so, when?.....
Measles? ..... If so, when? ...
Mumps? ..... If so, when?.....
Ringworm? ..... If so, when was it certified to be cured?.....
Scarlet Fever? ..... If so, when?.....
Smallpox? ..... If so, when? .....
Whooping-cough? ..... If so, when?.....

3. Has the pupil—
   had fits? ..... If so, when?.....
   been ruptured? ..... If so, when?.....
   had any discharge from the ear? ..... If so, when?.....

4. Is the pupil subject to any special form of illness, *e.g.* incontinence of urine? .....
   .....

5. Does the pupil suffer from any ailment, or constitutional peculiarity, affecting the general health, sight, hearing, etc., etc.? .....
   .....

6. Are the teeth in good order? .....

I hereby certify that, to the best of my knowledge and belief, the above-named.....has not, during the past three weeks, suffered from, or been exposed to any infectious disease (including *Chickenpox*, *Diphtheria*, *German Measles*, *Epidemic Roseola* (*Rose Rash*), *Measles*, *Mumps*, *Ringworm* (*scalp or body*), *Scarlet Fever*, *Smallpox*, *Whooping-cough*), or entered any house where such disease existed.

.....

Date..... *Parent* (*or Guardian*).

N.B.—If the child, at any time within three weeks before the date appointed for joining the school, has been exposed to any infection, *immediate* notice of the facts is to be sent to the School Authorities; and such child is on no account to be sent to the school without permission having first been obtained from them.

If, within three weeks after the pupil has joined the school, infectious illness breaks out in his home, *immediate* notice of the facts must be forwarded to the School Authorities.

HEALTH CERTIFICATE. (FORM NO. II.)

[*To be presented by the pupil on returning to the school after the holidays.*]

This Certificate must be filled in and signed by the Parent or Guardian not earlier than the day before that on which the pupil returns to school. Any suppression or wilful misstatement of important facts will be regarded as a violation of the terms on which the pupil remains at the school, and will render the pupil liable to immediate removal.

I hereby certify that, to the best of my knowledge and belief, ... has not, for at least three weeks [*or*,* during the holidays now ending], been exposed to any infectious disease (such as *Chickenpox*, *Diphtheria*, *German Measles*, *Epidemic Roseola* (*Rose Rash*), *Measles*, *Mumps*, *Ringworm of scalp or body*, *Scarlet Fever*, *Smallpox*, or *Whooping-cough*), or entered any house where such disease existed. He is in good health and fit for ordinary school life and work.

.....

Date..... *Parent* (*or Guardian*).

N.B.—If the pupil be exposed to any infection during the vacation, *immediate* notice of the facts is to be sent to the School Authorities; and the pupil is on no account to return to school without permission having first been obtained from them.

If, within three weeks after the pupil has returned to school, infectious illness breaks out in his home, *immediate* notice of the facts must be forwarded to the School Authorities.

* If the holidays have been of less than three weeks' duration.

Certificates for use in case of Illness and after Exposure to Infection.

(Form No. III.)

[*To be filled in and signed by the Parent or Guardian after the pupil has recovered from infectious illness during the holidays, and when the rules required by the school to be observed in such cases have been complied with.*]

I hereby certify that....., who was taken ill with.....on....., is now considered convalescent by h... Medical Attendant, and that the period, after which you stated (in your letter dated.....) that ....he might return to the School, will expire on..... To the best of my knowledge and belief ....he has not, since the beginning of h ... illness, been exposed to any other infection.

.....

Date ..... *Parent* (*or Guardian*).

(Form No. IV.)

[*To be filled in and signed by the Parent or Guardian after a pupil has been exposed to infection, and when the rules applied by the school to such cases have been complied with.*]

I hereby certify that....., who was exposed to the infection of..... on or about ..... (as I informed you on.....) will have completed the quarantine period of ..... days (in accordance with the terms of your letter of.....) on....., and that during this period ....he has not, to the best of my knowledge and belief, been exposed to the infection of that or any other disease.

All h.... clothes were disinfected at the beginning of the quarantine period.

.....

Date..... *Parent* (*or Guardian*).

(Form No. V.)

[*To be sent to the Parent or Guardian by the School Authorities when a pupil has recovered from an infectious illness at School, and is about to be sent home.*]

....., who was taken ill with.....on....., is now convalescent, and is believed to be free from infection. H.... clothes have been disinfected.

.....

Date.....

To.....

(Form No. VI.)

[*To be sent to the Parent or Guardian when a child returns home after having been exposed to infection at school.—Vide* Rule XXIV.]

..... { may have been / was } exposed to the infection of.....on or about..... The incubation period of the disease is about .....days; he should therefore be isolated, or kept under observation for at least .....days, dating from ..... If in good health at the end of that time, ...may then be considered to have escaped the disease—*provided the clothes were disinfected at the commencement of the period.*

.....

Date.....

To.....

N.B.—The clothes { have been / ought at once to be } disinfected.

APPENDIX B.

NOTIFICATION OF INFECTIOUS DISEASE.

The Public Health and Infectious Diseases Acts provide that every medical practitioner "attending on or called in to visit" any patient suffering from—

Smallpox,
Cholera,
Diphtheria,
Membranous croup,
Erysipelas,
Scarlatina (Scarlet fever),
Typhus fever,
Typhoid (enteric) fever,
Relapsing fever,
Continued fever,
Puerperal fever,
Cerebro-spinal fever,
Poliomyelitis,
Polioencephalitis,
Encephalitis lethargica,
or other disease to which the Act may have been extended,

shall, immediately on becoming aware that such patient is suffering from an infectious disease to which the Act applies, send a certificate giving all particulars to the Medical Officer of Health, under a penalty of 40 shillings.

The requisite Certificate Forms are supplied gratis by the Local Authorities, who pay a fee of 2s. 6d. for each certificate thus sent in to them—unless the case occurs in a public institution, when the fee is 1s.

A public school, a college, or a university is *not* "a public body or institution" within the meaning of the Act; and the fee of 2s. 6d. is therefore due in respect of each case of infectious disease notified as occurring amongst the members of such establishments.

It will be observed that every medical man who, in the exercise of his professional duties (as a consultant or otherwise), sees and recognises any case of the scheduled infectious diseases, is, technically, bound to notify, and can claim a fee for doing so. Practically such multiple notification is not insisted on, and a single notification of any case is regarded as a sufficient compliance with the requirements of the Act.

N.B.—The sending in of this Certificate is held by the Ministry of Health as constituting a legal claim for payment.

APPENDIX C.

DISINFECTION.

GENERAL THEORY OF DISINFECTION.

Disinfection implies destruction of the germs of disease in the discharges from the patient. Cleanliness is the basis of all disinfection, and the importance of both sanitary and surgical cleanliness can never be sufficiently emphasised.

There is no better means of preventing the spread of germs of disease than by the application of frequent and efficient scavenging and cleansing.

Soap and hot water provides the best general disinfectant for common use. Washing soda added to the water enhances the effect.

It would be more scientific if class-rooms, dormitories, bed and living-rooms, including their furniture and utensils, were more often cleansed, and less emphasis laid on fumigation or chemical disinfection—often indeed wasteful and unnecessary.

Disinfection (including fumigation, disinfestation and sterilisation) has become a very technical art. Where premises, clothing and bedding need disinfection it is advisable to call in the assistance of the Local Sanitary Authority.

DISINFECTION OF ROOMS.

GASEOUS DISINFECTION.

Formalin, formic aldehyde vapours.—This is perhaps the best gaseous disinfectant at present known. The room must be securely sealed up, the temperature should be not less

than 16° C. (60° F.), the air should be moist, and the duration of exposure should be at least four hours. For small rooms the convenient Alformant lamp may be employed, 20 to 40 Paraform tabloids being used for every 1,000 cubic feet of space.

Sulphurous acid gas.—A fair amount of reliance may be placed on this method, provided the air of the room is kept moist, 3 to 6 oz. of sulphur burned to every 1,000 cubic feet of space, the room securely sealed up and left undisturbed for twenty-four hours. The injurious action of sulphurous acid gas on many articles must be borne in mind. In this respect, and also as regards germicidal power and probably also penetrative ability, sulphur dioxide is said to compare unfavourably with formalin, but is more effectual in destroying vermin, such as lice and bugs.

After gaseous disinfection, ventilate the room as thoroughly and for as long a time as is practicable.

The floor and all surfaces capable of being washed should be thoroughly cleansed, and the water used for this purpose should contain some disinfecting substance. In view of its permanent and relatively non-poisonous characters, Izal, 1 to 100, is useful for this purpose.

DISINFECTION OF THE CONTENTS OF THE ROOM.

(Apart from the Bedding and Clothes.)

FURNITURE, BOOKS, BOOTS, SHOES, ETC.

All surfaces which can be washed should be thoroughly cleansed with a disinfectant solution. The furniture, books, boots, and any articles liable to be damaged or incapable of being dealt with by steam disinfection may be sterilised with formalin at the same time as the room is being disinfected. Books which have been exposed to infection, if not soiled, need not be burnt. It has been claimed that disinfection of books by formalin renders them safe. In most cases exposure to air *and* sunlight is sufficient to destroy the infection of most common diseases, *e.g.*, measles, scarlatina, diphtheria.

DISINFECTION OF THE FÆCES, URINE, AND MORBID DISCHARGES OF THE SICK.

No method is so effective as heating to 100° C. (212° F.) for ten minutes. But the evil odours evolved in the case of stools is a serious objection. In connection with the use of disinfectant solutions it must be remembered that no disinfectant can penetrate the solid lumps of fæces. The more solid a stool is, and the less thoroughly it is mixed with the disinfectant, the less satisfactory is the result as regards sterilisation.

Taking the disinfection of stools as an example, the following alternative measures may be recommended :

In ordinary cases—

1. Add about two teaspoonfuls of the crystals of potassium permanganate to 2 pints of water, bring to the boil, and pour the mixture over the stool. Allow to stand for half an hour. Mixing is to be recommended, but is not nearly so necessary as in plan 2.

2. Add to the stool 1 to 2 pints, according to its bulk, of one of the following solutions :

Corrosive sublimate	1 to 500
(L.G.B. formula, 2 soloids, B. W. & Co., in 1 pint.)	
Izal, ordinary	1 to 100
Carbolic acid	1 to 40
Copper sulphate	1 to 20
Formalin (40 p.c. solution of formic aldehyde gas)	1 to 20
Lysol	1 to 40

Mix as thoroughly as possible, and allow to stand for one hour. Some of the above disinfectants in the strengths named would not, with certainty, destroy the highly resistant spores of bacteria, but as regards the pathogenic microbes of the ordinary infectious diseases a margin sufficiently wide for safety has been allowed.

In special cases—

1. Corrosive sublimate, 1 to 500, duration of contact twenty-four hours.
2. Boiling for ten minutes.

NOTE.—A few drops of genuine eucalyptus oil poured on the surface of the water in the bed-pan into which fæces are discharged by the patient will prevent the emanation of disagreeable odours.

DISINFECTION OF LINEN.

Solutions of corrosive sublimate, 1 to 1,000; Izal, 1 to 250; carbolic acid, 1 to 100; and chloros, 1 to 1,000, acting for one hour, are all capable of disinfecting linen artificially inoculated with B. coli. Even pouring boiling water on the linen in amount sufficient to raise the temperature to such a height that at the end of five minutes the thermometer registers about 70° C. (158° F.) kills B. coli. But as linen soiled with the mucus and other discharges of the sick may, from a variety of causes, be much more difficult to sterilise as regards pathogenic microbes than the above figures would seem to indicate, stronger measures must be employed to ensure safety.

Alternative measures—

1. The linen should be steeped in cold water contained in a large vessel capable of being heated. This preliminary soaking is necessary to avoid fixing the stains during the subsequent heating operations. Next, apply heat until the water begins to boil, 100° C. (212° F.). After ten minutes, or when sufficiently cool to handle, wring out the linen and send it to the wash in the moist condition. A much lower temperature, about 70° C. (158° F.), would suffice in ordinary cases of infectious disease, but it is well to err largely on the safe side in matters of this kind. An emergency method is to pour boiling water over the linen in the proportion of about half a pint to each piece of linen the size of a handkerchief. No "washing" should be done on the infected premises.

DISINFECTION OF CUPS, SAUCERS, PLATES, SPOONS, KNIVES, ETC.

Place all the infected crockery, etc., in water, contained in a vessel specially set aside for this purpose and capable of being heated. Boil the water, and, when sufficiently cool, wash in the ordinary manner.

A much lower temperature, about 70° C. (158° F.), would suffice in ordinary cases, but it is as well to leave a wide margin for safety.

DISINFECTION OF CONVALESCENTS, AND OF THE ATTENDANTS ON THE SICK.

During the acute stage of an illness, it may be impossible or inadvisable to attempt much in the way of disinfection of the person, and the measures to be adopted must depend very largely on the nature of the illness.

After each motion in the case of those actually sick, the soiled parts should be wiped with absorbent cotton-wool soaked in a weak disinfectant solution and afterwards with dry cotton-wool, care being taken to burn the wool immediately after use. This procedure may not always be called for, but in some cases, notably enteric fever, its importance is obvious.

As regards disinfection of the mouth and throat, no substance has so far been found which, in the strength in which it is capable of being used, can effectively render the mouth sterile. But gargling, painting and spraying the throat, and washing the mouth with weak disinfectants, may prove of service. Brushes used for painting the throat should be kept in a disinfectant solution.

The surface of the body may be sponged with corrosive sublimate, 1 to 1,000; Izal, 1 to 200; or carbolic acid, 1 to 50. As regards baths, there is probably nothing better than soap and hot water followed by sponging with corrosive sublimate, 1 to 1,000; or Izal, 1 to 200.

The relatively innocuous character of Izal renders it useful in connection with disinfection of the person.

As regards the attendants on the sick, but little need be added. Scrupulous cleanliness is the chief consideration. The hands should be frequently washed in disinfectant solutions,

and, after bathing, the exposed surface of the body sponged with corrosive sublimate, 1 to 1,000; or Izal, 1 to 200. The routine use of antiseptic mouth-washes and gargles may be recommended.

Sponges, brushes, combs and tooth-brushes should be considered as infected articles and treated accordingly. When the hair is cut the clippings should be burnt.

In conclusion, the following points are worthy of note:

1. In all cases of infectious disease, the breath, perspiration, skin, hair, urine, fæces, throat, mouth, and the secretions of the nose, ears and eyes should be considered as possible means of spreading contagion.

2. Although all disinfectants should be treated as poisons, the dangerous properties of some (*e.g.*, corrosive sublimate and carbolic acid) and the relatively harmless natures of others (*e.g.*, Izal) should be borne in mind in relation to their proposed use.

3. The beneficial effect of bright sunshine in conjunction with fresh air in diluting and even in destroying the poison is a factor always worth remembering.

4. The best artificial disinfectant known is moist heat, applied either by boiling or by exposure to saturated steam under pressure.

5. The best gaseous disinfectant at present known appears to be formalin.

6. A useful emergency rule to remember is that the addition of *boiling* water to infective material, in the proportion of 4 parts of the former to 1 part of the latter, raises the temperature of the mixture so materially that at the end of five minutes it is still above 70° C. (158° F.), and this temperature, in all probability, suffices to destroy the microbes of ordinary infectious disease.

7. Time is an important factor in sterilisation processes. A strong solution of a disinfectant acting for only a short time may not be as effective as a weak solution acting for several hours. All disinfectants acting by close association with infection must be in solution.

8. Faith in disinfection must not obscure the importance of carriers in spreading disease.

INDEX.

Admission examination (medical) . . . . p. 19, par. XI (3)
Ailments, slight . . . . . p. 17, par. IX (1)
Albuminuria . . . . . p. (i); p. 27, par. XXI
Ambulance, disinfection of . . . . . p. 24, par. XV (1)
,, charge of . . . . . p. 24, par. XV (2)
Annual report, medical officers' . . . . p. 13, par. III (3)
Articles, infected . p. 17, par. VIII (3); p. 22, par. XIII; p. 24, par. XV; p. 25, par. XVI; p. 25, par. XVII; p. 25, par. XVIII; p. 25, par. XIX; *see* Appendix C, p. 39.

Bacteriological examination p. 21, par. XIII; p. 26, par. XX; p. 27, par. XXI
Bedding, infected . p. 25, par. XVI; p. 25, par. XVIII; *see* Appendix C, p. 39.
Bins, dust . . . . . p. 12, par. I (6)
Books, infected . . . p. 17, par. VIII (3); p. 25, par. XVI; *see* Appendix C, p. 40.

Carriers, diphtheria . . . . . p. 21, par. XIII
Cerebro-spinal fever. . . . . p. (ii); p. 21, par. XIII
Certificates, health . p. 18, par. XI; p. 19, par. XII; *see* Appendix A, pp. 33–37.
Cesspools . . . . . p. 12, par. I (4)
Chickenpox (Varicella) . pp. (i), (ii); p. 20, par. XIII; p. 23, par. XIV (1) and (2); p. 27, par. XXI
Cisterns . . . . . p. 14, par. IV (2)
Closets, water . . . . . p. 12, par. I (3)
,, earth . . . . . p. 12, par. I (4)
Closure of school (infectious illness) . . . p. 30, par. XXIII
Clothes, infected . p. 18, par. XI; p. 23, par. XIV (1); p. 25, par. XVI; p. 27, par. XXI; p. 31, par. XXIII; *see* Appendix C, p. 39.
Colds, common (*see* Sore throats) . . . . . p. 22, par. XIII
Conjunctivitis (*see* Ophthalmia) . . . . . p. 28, par. XXI
Contacts of infectious disease . p. 18, par. XI; p. 19, par. XII; p. 20, par. XIII; p 23, par. XIV
Conveyance of infection home, precautions against p. 30, par. XXIII; p. 31, par. XXIV

Dairy, school . . . . . p. 14, par. V
Day pupils, infection introduced by . . . p. 23, par. XIV (1)
Dietaries . . . . . p. 15, par. V
Dining hall, inspection of . . . . . p. 15, par. V
Diphtheria . pp. (i), (ii); p. 20, par. XIII; p. 23, par. XIV (2); p. 26, par. XX; p. 27, par. XXI
,, carriers . . . . . p. 21, par. XIII
,, (Schick test) . . . . . p. 21, par. XIII
Disinfection, occasions for . p. 17, par. VIII (3); p. 18, par. XI; p. 20, par. XII; p. 22, par. XIII; p. 24, par. XV; p. 25, par. XVI; p. 25, par. XVII; p. 25, par. XVIII; p. 25, par. XIX; p. 27, par. XXI; p. 31, par. XXII
,, theory and practice of . *see* Appendix C, pp. 39–44.

Dispersion of school (for infectious illness) . . p. 30, par. XXIII
Drain gullies . . . . . p. 12, par. I (7)
Drains . . . . . pp. 11, 12, par. I (1 and 4)
Dustbins . . . . . p. 12, par. I (6)
Duties of school authorities . . . . . p. 31, par. XXIV

Earth closets . . . . . p. 12, par. I (4)
Encephalitis lethargica . . . . . p. (ii); p. 21, par. XIII
Entrance certificates . . p. 18, par. XI; *see* Appendix A, p. 33.
Epidemic Parotitis (Mumps) pp. (i) (ii); p. 20, par. XIII; p. 28, par. XXI
,, Roseola (Rose Rash) . pp. (i), (ii); p. 20, par. XIII; p. 29, par. XXI
Epidemics, restriction to junior school . . . . p. 12, par. II
Examination (medical) on admission . . . p. 19, par. XI (3)
Exeat, exposure to infection during . . . . p. 20, par. XII
Exposure to infection . p. 18, par. XI; p. 19, par. XII; p. 29, par. XIII; p. 23, par. XIV

Farm, dairy . . . . . p. 14, par. V
Filters, water . . . . . p. 14, par. IV (4)
Fire, precautions against . . . . . p. 17, par. X
Food supply . . . . . p. 14, par. V
Freedom from infection . . . . . p. 27, par. XXI

Games, infected . . . . . p. 17, par. VIII (3)
German Measles (Rubella) pp. (i), (ii); p. 20, par. XIII; p. 27, par. XXI
Glandular Fever . . . . . p. 21, par. XIII
Gullies, drain . . . . . p. 12, par. I (7)

Headache . . . . . p. 17, par. IX (1)
Health certificates . p. 18, par. XI; p. 19, par. XII; *see* Appendix A, pp. 33–37.
Hospital, removal to . . . . . p. 24, par. XV
Hygiene, general . . . . . p. 11, par. I

Illness, slight . . . . . p. 17, par. IX (1)
,, annual report of . . . . . p. 13, par. III (3)
Immunity, acquired . . . . . p. 22, par. XIII
Incubation periods . . . . . p. (ii)
Infectious ward . . . . p. 16, par. VII; p. 16, par. VIII (1)
,, ,, general precautions in . . pp. 24, 25, par. XV (3–8)
Infirmary . . . . . p. 16, par. VII
Inspection of milk and food supplies . . . . p. 14, par. V
,, of pupils by medical officer p. 19, par. XI (3); p. 31, par. XXIV
,, of school premises . . . . . p. 13, par. III (2)
Introduction of infection, precautions against . . . p. 23, par. XIV
Isolation of infectious cases . p. 16, par. VII; p. 24, par. XV; p. 25, par. XIX; pp. 27–29, par. XXI
,, of suspected cases . . p. 17, par. IX (1); p. 26, par. XX
,, periods . . . . . p. (i); p. 27–29, par. XXI

Joints, drain and soil pipe . . . . . p. 11, par. I (2)
Junior and senior schools . . . . . p. 12, par II

Kitchen, inspection of . . . . . p. 15, par. V

Laundry . . . . . p. 15, par. VI

Law, notification of infectious disease . . *see* Appendix B, p. 38.
Linen, infected . . . p. 25, par. XVIII; *see* Appendix C, p. 42.
Linen, precautions in laundering . . . . . p. 15, par. VI
Local outbreaks . . . . . p. 23, par. XIV

Matron, notice to . . . . . p. 17, par. IX; p. 25, par. XVI
Meals, regulation of . . . . . p. 15, par. V
Measles (Morbilli) . . pp. (i), (ii); p. 20, par. XIII; p. 28, par. XXI
Measles epidemics . . . . . p. 12, par. II
Medical control and responsibility . . . . . p. 13, par. III
„ examination on admission . . . . p. 19, par. XI (3)
Milk supply . . . . . p. 14, par. V
Morbilli (Measles) . . pp. (i), (ii); p. 20, par. XIII; p. 28, par. XXI
Mumps (Epidemic Parotitis) pp. (i) (ii); p. 20, par. XIII; p. 28, par. XXI

Neighbouring towns, infection in . . . . p. 23, par. XIV
Nits . . . . . p. 19, par. XI (3)
Notice to matrons (suspected infectious cases) p. 17, par. IX; p. 25, par. XVI
„ to parents as to illness . . p. 30, par. XXII; p. 31, par. XXIV
„ by parents as to illness . . p. 18, par. XI (1); p. 19, par. XII
Notification of infectious disease . . . *see* Appendix B, p. 38.
Nurses . . . . . p. 24, par. XV (3)

Observation ward . . . . . p. 16, par. VIII (1)
Ophthalmia . . . . . p. 28, par. XXI
Outbreaks of infectious disease—school . p. 12, par. II; p. 30, par. XXIII
„ „ „ locality . . . p. 23, par. XIV
Overflow pipes . . . . . p. 12, par. I (5)

Parents, notice to . . . . p. 30, par. XXII; p. 31, par. XXIV
„ „ by . . . . p. 18, par. IX (1); p. 19, par. XII
Periods of incubation . . . . . p. (ii)
„ of isolation . . . . . p. (i); pp. 27-29, par. XXI
„ of quarantine . . . . . p. (ii); p. 20, par. XIII
Pertussis (Whooping-cough) pp. (i), (ii); p. 20, par. XIII; p. 29, par. XXI
Physical examination on admission . . . p. 19, par. XI (3)
Pipes, soil or vent . . . . . p. 11, par. I (2)
„ overflow, rain-water and waste . . . p. 12, par. I (5)
Plans, sanitary lighting, etc. . . . . p. 12, par. I (8)
Polioencephalitis . . . . . p. (ii), p. 21, par. XIII
Poliomyelitis . . . . . p. (ii), p. 21, par. XIII
Primary certificate . . p. 19, par. XI (2); *see* Appendix A, p. 33.
Pupils to report (when ill) . . . . . p. 17, par. IX (1)

Quarantine, occasions for . p. 18, par. XI; p. 19, par. XII; p. 23, par. XIV (1); p. 31, par. XXIV
„ periods . . . . . p. (ii); p. 20, par. XIII
Quinsy (*see* Sore throat) . . . . . p. 22, par. XIII

Rain-water pipes . . . . . p. 12, par. I (5)
Refuse, disposal of . . . . . p. 12, par. I (6)
Removal to hospital, infirmary or ward . . . . p. 24, par. XV
„ of pupils from school (during outbreaks of infection) p. 30, par. XXIII
Ringworm . . p. 19, par. XI (3); p. 22, par. XIII; p. 29, par. XXI
Rooms, disinfection of . . p. 25, par. XVII; *see* Appendix C, p. 39.

Rose Rash (Epidemic Roseola) pp. (i), (ii); p. 20, par. XIII; p. 27, par. XXI
Rubella (German Measles) pp. (i), (ii); p. 20, par. XIII; p. 27, par. XXI
Sanatorium, school . . . . . p. 16, par. VIII
Sanitary arrangements . . . . . p. 11, par. I
Scarlet Fever (Scarlatina) pp. (i), (ii); p. 20, par. XIII; p. 23, par. XIV (2); p. 29, par. XXI
,, ,, doubtful cases of . . . . . p. 26, par. XX
Schick test (Diphtheria) . . . . . p. 21, par. XIII
School premises, inspection of . . . . p. 13, par. III (2)
Scurf (*see* Ringworm) . . . p. 22, par. XIII; p. 29, par. XXI
Senior and Junior Schools . . . . . p. 12, par. II
Septic Throat (*see* Sore throat) . . . . . p. 22, par. XIII
Servants, infection in family of . . . . p. 23, par. XIV (3)
Sickness . . . . . p. 17, par. IX (1)
,, return, annual . . . . . p. 13, par. III (3)
Sick-room . . . . . p. 17, par. IX
Smallpox (Variola) pp. (i), (i); p. 20, par. XIII; p. 23, par. XIV (1) and (2); p. 29, par. XXI
Soil pipes . . . . . p. 11, par. I (2)
Sore throat . . . . p. (ii), p. 17, par. IX (1); p. 22, par. XIII
Staff, infection in family of . . . . . p. 23, par. XIV (2)
Suspected cases of infection . p. 17, par. IX; p. 19, par. XII; p. 22, par. XIII (Sore throats); p. 26, par. XX; p. 31, par. XXIV

Tables of incubation, quarantine and isolation periods . pp. (i), (ii)
Term certificates . . . . . p. 19, par. XII
Tonsillitis (*see* Sore throat) . . . . . p. 22, par. XIII
Toxin-antitoxin (*see* Diphtheria) . . . . . p. 21, par. XIII
Trachoma . . . . . p. 19, par. XI (5); p. 28, par. XXI
Tradesmen, infection in family or assistants of . p. 23, par. XIV (3)

Ulcerated throat (*see* Sore throat) . . . . p. 22, par. XIII

Vaccination . . . . . p. 19, par. XI (4)
Varicella (Chickenpox) pp. (i), (ii); p. 20, par. XIII; p. 23, par. XIV (1) and (2); p. 29, par. XXI
Variola (Smallpox) pp. (i), (ii); p. 20, par. XIII; p. 23, par. XIV (1) and (2); p. 27, par. XXI
Vent pipes . . . . . p. 11, par. I (2)
Vomiting . . . . . p. 17, par. IX (1)

Ward, infectious . . p. 16, pars. VII and VIII (1); p. 24, par. XV
,, observation . . . . . p. 16, par. VIII (1)
Wards, disinfection of . . p. 26, par. XIX; *see* Appendix p. 39.
Waste pipes . . . . . p. 12, par. I (5)
Water, analysis of . . . . . p. 14, par. IV (3)
,, closets . . . . . p. 12, par. I (3)
,, drinking . . . . . p. 14, par. IV (1)
,, filters . . . . . p. 14, par. IV (4)
,, supply . . . . . p. 14, par. IV
,, well . . . . . p. 14, par. IV (3)
Whooping-cough (Pertussis) pp. (i), (ii); p. 20, par. XIII; p. 29, par. XXI

EFFICIENT

DISINFECTION

can be carried out

—— with the ——

FORMALIN Co'.s

PRODUCTS.

Pure Formalin 40 per cent.

Formalin Sprayers.

Alformant Lamps.

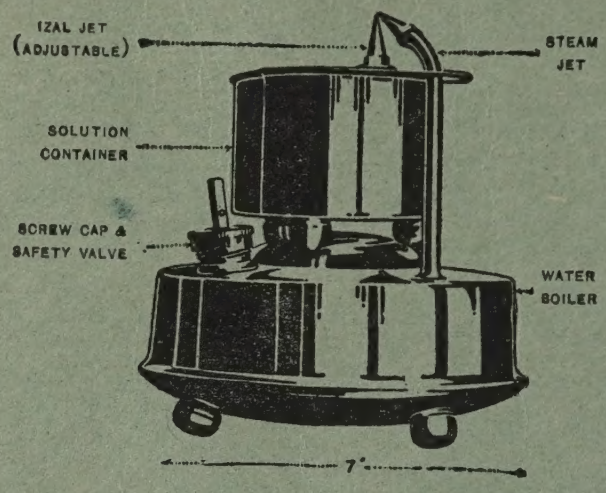
Formalin Disinfecting Tablets.

Prices and Particulars from :

THE FORMALIN HYGIENIC CO.

(Estab. 1897) LTD.

3, Lloyd's Avenue, London, E.C. 3.



"THE ZAL DISINFECTOR."

The mucous membrane of the nose and throat have been described as the seat of primary infection in Influenza, Scarlet Fever, Diphtheria, Measles, Pneumonia, etc., etc.

Steam charged with finely atomised Izal, which can be agreeably inhaled, has a stimulative & antiseptic effect on the mucous membrane of the respiratory passages.

Charge the atmosphere of an ordinary room with Izal steam by use of one Zal Disinfector, and cause Children or Adults to inhale for ten minutes as a prophylactic measure against catarrhal infection and other respiratory diseases.

Information as to special application, together with scientific literature, supplied free to the Members of the Medical Profession.

NEWTON, CHAMBERS & Co., Ltd.

Thorncliffe, nr. Sheffield.